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The Armstrong Laboratory Reference Laboratory Upgrade
Project

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On 1 February 1990, the Epidemiology Division began the first phase of a reference laboratory automation project aimed at improving clinical laboratory support while improving efficiency and lowering costs. Thirty sites, representing a cross section of Continental United States (CONUS) medical treatment facilities (MTFs), were selected as 1-year test sites for the initial evaluation of the project. These sites were equipped with printers and modems which were electronically connected to the Epidemiology Division laboratory for rapid result reporting. In addition, these MTFs were provided with courier service for overnight specimen delivery. By the end of the test period, the project has proven to be highly effective and has significantly improved laboratory support to facilities served.

Improved laboratory services
VA sharing agreement

Decreased costs
Increased workload

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Unclassified

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Title: The Armstrong Laboratory Reference Laboratory Upgrade Project

The Epidemiologic Research Division of the Armstrong Laboratory, Brooks AFB Texas, provides the Department of Defense and the United States Air Force (USAF) Surgeon General with epidemiologic, preventive medicine, and disease surveillance expertise. This division is the primary organization for the collection, analysis, interpretation, and reporting of epidemiological data on the health of USAF personnel. The division also provides reference laboratory services to medical treatment facilities worldwide and performs more than 1.1 million tests annually.

On 1 February 1990, the Epidemiologic Research Division began the first phase of a reference laboratory automation project aimed at improving clinical laboratory support by increasing efficiency and lowering costs. Thirty sites, representing a cross section of Continental United States (CONUS) medical treatment facilities (MTFs), were selected as test sites for a 1-year evaluation of the project. These sites were equipped with printers and modems linked to the Brooks Air Force Base laboratory for rapid electronic result reporting. The MTFs were also provided with courier service for overnight delivery of specimens. By the end of the test period, the project proved to be highly effective and significantly improved laboratory support to facilities served.

The concept behind the upgrade in reference laboratory service began in 1985 with a process that would be called a Total Quality Management (TQM) initiative today. Epidemiologic Research Division personnel searched for ways to improve the quality of service and the timeliness of result reporting (turn-around times). Before the upgrade project, laboratory specimens were

mailed from USAF MTFs around the world. Once testing was completed, results were mailed back to the requesting facilities. Turnaround times under these conditions averaged 14-21 days, even within CONUS. Test results requiring rapid response were usually reported by telephone, which consumed additional laboratory technician time and did not eliminate mailing requirements. At best, turnaround times remained at 7-10 days. Patient care demands often forced many MTFs to pay commercial laboratories for timely clinical test results. A new approach toward meeting customer requirements was obviously needed. The first step in improving services required collection and analysis of information from the laboratory's customers. The division surveyed 120 MTFs to determine the level of service they received, the number of tests being referred to commercial laboratories, and the costs of commercial testing. The survey also determined the number of tests that could be recaptured by the Epidemiologic Research Division if turnaround times could be improved. Results of the survey showed that about 265,000 tests were being referred to commercial laboratories annually at a cost of about \$4.1 million to the USAF. The survey also revealed that nearly 40% of this work load could be done in the Epidemiologic Research Division at a substantially lower cost if the timeliness of testing could be improved.

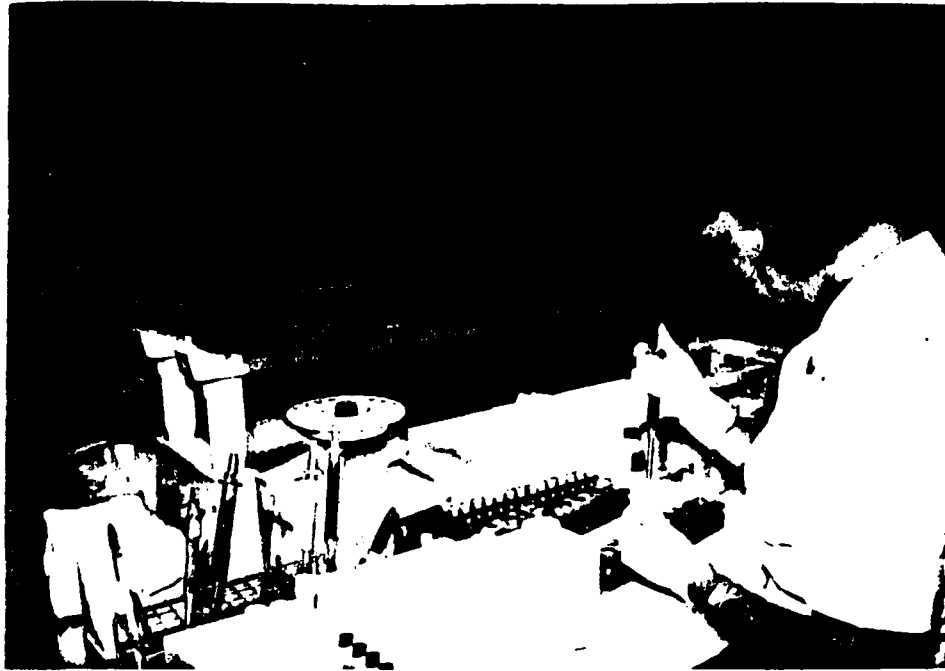
After collecting and analyzing data from the survey, a plan to upgrade laboratory services was developed. The plan identified the resources needed to support the project, the 30 test site participants, and standards of performance. Current computer support to include hardware, software, and data entry capability was inadequate to support the upgrade. Other requirements, such as standardization of supplies to ship the specimens and a cost effective courier contract, were also required to improve customer service. Purchase of a new

computer for the upgrade project was not feasible; however, a suitable computer was declared excess by another organization and was acquired at no additional cost. Software requirements were met through the cooperation of the Department of Veterans Affairs (DVA), saving thousands of dollars in software costs. The DVA had developed and implemented a clinical laboratory data automation system that satisfied USAF needs with minimal modification. This system was also compatible with the Composite Health Care System (CHCS). Once computer hardware and software components were implemented, initial computer training was developed in-house which was tailored to the objectives of the project. Data entry clerks and overnight courier service were obtained through existing contracts, saving manpower, time, and money in negotiating new contracts for the same service. Standardized supplies for specimen collection and shipping were also purchased to ensure compatibility with existing equipment and to maximize testing capabilities. After completion of the 1-year trial period, an assessment of the initial phase of the project was completed. The success and effectiveness of the project were immediately seen. Specimen turnaround times showed a dramatic change, decreasing to an average of 3 days, enhancing timely diagnosis of illness and ultimately improving patient care. As response times improved, a corresponding increase in the number of tests performed was also noticed. Work load in our laboratory has increased by approximately 20% as a direct response to the improved turnaround times.

The initial assessment of the project also compared the average cost per test of commercial laboratories with those of the Epidemiologic Research Division. Commercial laboratory costs averaged \$27.83 per test, as compared to an average cost of \$11.80 per test for the Epidemiologic Research Division. These

figures compared the same type and volume of tests and applied a 40% high volume discount to the commercial laboratory list price. Cost avoidance calculated with this model for the 30 sites during the first year of the project amounted to \$2,279,483.

Plans are now under way to expand the upgraded services to a total of 90 USAF facilities by the end of fiscal year (FY) 92. The laboratory service upgrade has proven to be a highly successful initiative. It has significantly improved service to our customers and has freed a substantial amount of supplemental care dollars to be spent in other areas of medical need.



SrA Capati performing diagnostic tests

Fig. 1